

The role of anatomy variations and respiratory allergy in the central nasal compartment inflammation

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Background

The united airway concept describes the nasal cavity and the sinuses as integrated unit. This concept applies to our analysis of allergic rhinitis and allergic inflammation of the central compartments of paranasal sinuses and nasal septum previously literally named central compartment atopic disease. Nasal septal deviation and variations of nasal anatomy may in fact be related to recurrent inflammation of paranasal sinuses. When evaluating the patient with allergic rhinitis individual anatomy should be taken in consideration in order to choose proper medical treatment.

Method

15 patients (8 males), median age 42 ± 13.15 with clinical symptoms of respiratory allergy were divided into two groups according to their paranasal sinuses inflammation extent. 8 patients with allergic rhinitis and concomitant central compartment inflammation of ethmoid and maxillary sinuses were set to the first group and 7 patients with allergic rhinitis alone to the second one. Patients with previous surgery and maxillary sinus foreign bodies were excluded. All patients underwent CT scans with validation by Lund-Mackay score to evaluate sinus inflammation and individual anatomy (nasal septal deviation, concha bullosa, accessory maxillary ostium, infraorbital ethmoid Haller's cells). All clinical symptoms (rhinorrhea, sneezing, nasal obstruction and others) were graded according VAS, general atopic state was confirmed by levels of blood sIgE elevated above 0.35 kU/l with ImmunoCAP assay.

Results

All 8 patients of the first group with central compartment inflammation had anterior or middle nasal septal deviation. Only 3 patients out of 7 patients with isolated allergic rhinitis (44,86%) had nasal septal deviation but in posterior part. The presence of central compartment sinus inflammation according CT scans correlated with anterior or middle nasal septal deviation (x^2 Pearson = 0.645, $p = 0.009$). While anterior and middle nasal septal deviation in the first group nasal obstruction was not the main complaint in all 8 patients, we have found an inverse correlation between clinical symptom of nasal obstruction and central ethmoid and maxillary sinuses inflammation on CT scans (x^2 Pearson = - 0,645, $p = 0.009$). Additionally there was a slight positive statistically not significant correlation between Haller' cells and central compartment inflammation (x^2 Pearson = 0.468, $p = 0.079$).

Conclusion

Nasal anatomy variations may in fact be related to concomitant inflammation of paranasal sinuses central compartments in case of respiratory allergy but it still needs further evaluation according to the united airway concept.

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